



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 REGION 5
 77 WEST JACKSON BOULEVARD
 CHICAGO, IL 60604-3590

AUG 22 2017

REPLY TO THE ATTENTION OF:

W-15J

Dr. Abdul Zehraoui, Director
 Water Utilities
 City of East Chicago
 5200 Indianapolis Blvd.
 East Chicago, Indiana 46312

Re: Follow-up to May 3, 2017 Meeting Between the City of East Chicago, IDEM and U.S. EPA

Dear Dr. Zehraoui:

I apologize for the delay, but I did want to respond to the requests that were made to U.S. EPA by the City of East Chicago during the May 3rd joint meeting between the City, the Indiana Department of Environmental Management (IDEM), and U.S. EPA. As you know, these issues are complex, and my staff and I took considerable time to carefully consider the requests. Further, EPA discussed the City's requests and EPA's planned responses with IDEM at considerable length before arriving at the responses set forth below. I very much appreciate the City's patience, and hope these responses are helpful.

City Request No. 1. – EPA Support for a City-Wide Lead Sampling and Analysis Project

Wholly aside from potentially problematic issues pertaining to costs, lab certification, data QA, *etc.*, EPA does not believe such a comprehensive sampling plan would be useful to the City in prioritizing which lead service lines (LSLs) should be replaced first. Particulate lead release from LSLs is sporadic and unpredictable, and EPA does not believe that the sampling results would be a reliable indicator of long-term exposure risk. Instead, EPA suggests that other risk-based criteria such as the presence of young children or pregnant/nursing women in a home may be more useful in prioritizing the order of LSL replacements. EPA also suggests that the City consider completing LSL replacement for entire block(s) or neighborhood(s) at the same time, perhaps as part of other utility/construction projects, to reduce project costs.

Regardless of whether the City ultimately conducts such sampling, the City and its contractors should take measures to reduce the risk of exposure to particulate lead that could be released into tap water during the LSL replacement process. Residents should be instructed not to use water during the excavation, in order to prevent lead particles from

getting into the house. In addition, following LSL replacement, flushing (e.g., running water at an exterior spigot or at a utility sink in the basement) has been shown to help clear any remnant lead particles.

If the City chooses to collect water samples after LSL replacement, the City should carefully evaluate any lead in flush samples and whether improvements to LSL replacement procedures are needed (e.g., longer flushing, flushing at all taps in home). Any lead detected after LSL replacement in 1-minute or 3-minute flush samples would likely be residual particulate lead released prior to or during LSL replacement and trapped in the home pipes; lead would not be coming from the new copper service line. Finally, EPA is certainly supportive of the City's contemplated participation in the Water Research Foundation Project as the City's resources allow.

City Request No. 2 – Orthophosphate Optimization Study

EPA strongly supports the City's desire to conduct a corrosion control optimization study, and emphasizes that the use of pipe loops as part of the study is essential. Although EPA does not have resources to provide to the City for the study, EPA would be willing to provide technical assistance with setting up the pipe loops, *etc.*

City Request No. 3 – More Detailed Analysis of EPA Sequential Sampling Results and an Explanation of the City's Drinking Water Status that the Public Can Understand

Region 5 has placed the sampling results from the pilot study on its website and used the sampling results to help identify best practices when excavating contaminated soil from residents' yards. Due to resource constraints, EPA does not currently plan to do a more detailed analysis of the pilot study sampling results, but will be happy to further discuss the results with the City or to answer any questions that City may have about the results.

EPA understands and appreciates the City's desire to be able to clearly address its citizens' concerns about the City's drinking water that arose because of EPA's pilot study. EPA offers the following key points to help explain the status of the City's drinking water quality, and hopes that these points are of use to the City when communicating with City residents:

1. When water leaves the City's drinking water treatment plant, and enters the City's water mains (the large pipes running under the City's streets), it is lead-free.
2. The water mains running under the City's streets do not contain lead that can come into contact with the water. (The only lead associated with the mains is located on the outside surface of the mains and only where sections are joined.) These City-owned water mains are made of concrete or iron and, because the metal portion of the main that comes into contact with the water does not contain lead, the mains cannot leach lead into the drinking water. The water mains are connected to "service lines" which provide water to each individual home or

building. The portion of the service line that runs from the water main to the resident's property line is owned by the City, but the portion of the service line that runs from the property line into the home is owned by the property owner. Either or both portions of the service line may be made of lead.

3. At homes with lead service lines (LSLs), the LSL and any connected galvanized iron pipe are the primary sources of lead found in tap water. Lead may also get into tap water from lead pipes or lead-containing plumbing fixtures inside the home, including old brass plumbing fixtures and leaded solder (which was historically used to hold pipe sections together). The City has estimated that over 82% of homes in East Chicago have LSLs that carry drinking water from the City's water mains into homes and buildings. It is within the LSL and any connected galvanized iron pipe, or the lead-containing indoor plumbing fixtures, where the drinking water becomes exposed to lead.
4. The federal regulation intended to reduce lead in drinking water is known as the Lead and Copper Rule (LCR). The LCR does not require the complete absence of lead in drinking water. Rather, the LCR requires that: 1) East Chicago must, on a regular basis, sample a certain number of customer residential taps using specific sampling methods; and 2) lead concentrations cannot exceed 15 parts per billion (ppb) in more than 10% of the customer taps sampled. If LCR sampling indicates that more than 10% of customer taps sampled have lead levels greater than 15 ppb (a level known as the "action level"), the LCR requires that the City undertake specific actions. The City of East Chicago has not exceeded 15 ppb in more than 10% of the samples since 1993.
5. As noted above, lead can get into a home's drinking water by coming into contact with LSLs or lead-containing plumbing materials. Young children, infants, and fetuses are particularly vulnerable to lead because the physical and behavioral effects of lead occur at lower exposure levels in children than in adults.
6. EPA's drinking water pilot study conducted in the fall of 2016 at the USS Lead Superfund Site in East Chicago was intended to study whether vibrations caused by soil excavation activities at the Superfund site could increase lead levels in residences' drinking water by knocking lead particles off the interior surfaces of LSLs. EPA sampled water from a number of homes before and after soil excavation activities by using "sequential sampling", a method which collects samples from the home's drinking water pipes and the LSL. If the vibrations caused by the soil excavation activities were causing lead particles to be knocked off the interior surfaces of the LSLs, lead levels should be higher in the samples collected after the soil excavation activities at a residence took place.
7. The pilot study results showed lead levels in some of the East Chicago homes tested were higher than 15 ppb, including some of the samples collected before any soil excavation activities took place.

- Because data from some of the homes showed lead levels above 15 ppb, EPA notified the residents living in these homes about the elevated lead levels and advised residents that they should keep using the lead-reducing faucet filters provided by EPA prior to the start of the pilot study. Such certified filters can remove 99% of the lead in drinking water.
 - During the course of its pilot study, EPA also noted low levels of orthophosphate in the City's drinking water. EPA shared the information with the Indiana Department of Environmental Management (IDEM), who in turn shared the information with the City. The City increased the amount of orthophosphate being added to the City's drinking water. IDEM's recent tap water sampling at 35 residences around the City indicated increased levels of orthophosphate in East Chicago's system.
8. IDEM's recent sampling of East Chicago drinking water at 35 homes throughout the City went beyond the LCR sampling requirements. With two exceptions, all the sampling results were below 15 ppb.
 9. IDEM has also offered lead-reducing faucet filters to all the residents living within the boundaries of the USS Lead Superfund site, out of an abundance of caution, due to the potential cumulative exposure to multiple sources of lead. In particular, remediation activities such as the soil excavation activities underway in Zones 2 and 3 can potentially disturb lead water lines, and there is a chance that small particles of lead can break off and get into the water. The filters are designed to protect residents in the Superfund site from this construction-related risk. The use of such lead-reducing certified faucet filters in these homes essentially eliminates drinking water as a possible source of lead contamination, thereby reducing the overall risk of lead exposure. Lead-reducing filters have not been provided to the City residents living outside the Superfund area, because these residents do not face the same risk factors caused by multiple exposure pathways.
 10. The only way to eliminate lead exposure from drinking water in a home is to replace any lead service line connected to the home as well as any other lead-containing pipes or plumbing fixtures associated with the home. Even though the City of East Chicago is not required to do so by the LCR, it has chosen to replace LSLs on both public and private property in Zones 2 and 3 of the Superfund site.
 11. Until lead service lines and other lead-containing components are removed, the next best approach is for a homeowner to properly install, use and maintain a certified lead filter at the tap, which can remove up to 99% of lead from a home's tap water.
 12. It is likely that some amount of lead will be present in homes with lead service lines. This is true even in drinking water systems that are: 1) in full compliance with the LCR; 2) properly using corrosion-control chemicals to minimize lead

levels; and 3) getting sampling results below the action level of 15 ppb. In other words, a system's compliance with the LCR does not mean a resident's drinking water is "lead-free" at all times. Lead release from service lines or other lead-containing components is variable, and depends on many factors, including disturbance to the service lines, amount of flow through the system, water chemistry, and seasonal variability. Although effective corrosion control minimizes lead in drinking water systems, no system that contains lead components can be considered "risk-free" for all populations at all times. It should be noted that East Chicago has a high quality water source, a new treatment facility, and has significantly increased orthophosphate levels in recent months. This means that the water quality in East Chicago is as good or better than comparable cities with lead service lines.

13. EPA is planning to make revisions to the LCR, in order to strengthen its public health protections and to clarify its implementation requirements to make it more effective.

City Request No. 4 - EPA Follow-up Sequential Sampling in 18 Homes within the Superfund Site Where the Pilot Study Showed Lead in Excess of Action Level.

EPA does not believe follow-up sequential sampling at the 18 homes would provide additional insights or result in actions that are not already being taken. As discussed above, lead release from lead service lines is sporadic and may be high, even where the water is properly treated to reduce corrosion. Additional factors, including increasing temperature (i.e., August versus October-December), changes in water quality (increased output from the City's membrane plant), and plumbing/service line repairs/replacement, could cause problems with interpretation of any follow-up sampling.

EPA believes it would be more useful to install pipe loops for long-term assessment of the corrosion control treatment, as a continuation of the Orthophosphate Optimization Study proposed by the City (see above). EPA also supports the actions Indiana and the City are already taking to replace LSLs at homes within the Superfund site, which will remove the major source of source of lead in drinking water at those homes. Further, EPA encourages City residents concerned about lead levels in their drinking water to use certified lead-reducing filters until such time as their LSL and any connected galvanized iron portion of the service line are removed.

I hope this information is helpful to the City, and EPA would be happy answer any follow-up questions the City may have regarding these issues.

Sincerely,



Chris Korleski
Director, Water Division

cc: Beth Admire, IDEM
Martha Clarke Mettler, IDEM
Mary Hollingsworth, IDEM